In the Specification:

[0051] At the low frequency of 50-60 Hz of the A.C. line, the antenna acts as an equivalent electric source in series with a capacitor represented in FIG. ~~1~~ 2 as C_{ant}. To understand this model, we recall that the conductor is an equipotential surface maintained at a potential determined from the background electric fields. Now consider the case when the user's body is held at a constant electric potential such as the case when the user is grounded or held at an electric potential by a voltage source. By moving the user's hand or command control surface~~,~~ toward the antenna, charge on the antenna rearranges itself. This polarization of charge on the antenna and surrounding objects is necessary to ensure the electric potential is maintained on each object.

[0054] A new feature in this invention is the deliberate use of the background noise characteristics to detect motional commands and body language. The motional commands modulate the sensitivity of the sensor to the characteristic A.C. background. This A.C. background may be a 50 to 60 hertz background noise signal resulting from the normal A.C. power lines 10, Fig. 1, in the vicinity of the sensor. The induced polarization charge on the antenna is caused by a spatial change in the electrical potential conditions. The electrical potential in the spatial dimension satisfies Laplace's equation. Doing so dictates the presence of the polarization charge on the antenna and the surrounding objects.

[0057] The effect of the presence of C_{opt} is to reduce the sensitivity of the amplifier. Such reduction results in a noticeable amplitude modulation of the characteristic background noise waveform produced at the output of the MCS sensor in FIG. 1. The output of the MCS sensor will generally be connected to a control system 11, Fig. 1, which can control an electrical appliance such as a computer.

[0065] The motional command system is sensitive to motional commands having duration of 0.2 – 3 seconds. The preferred embodiment of the MCS is in a computer or video display unit. FIG. 3 indicates the placing of sensors on the sides of a CRT computer monitor forming an array of MCS sensors. The sensors may be placed inside the monitor housing. Sensors 1 and 2 are placed to the left and right, sensors 3 and 4 to the top and bottom, and sensors 6 and 5 to the front and back of the CRT monitor display area. The antennas of the sensors 2 and 1 are oriented vertically on the right and left sides, the antennas of the sensors 3 and 4 are oriented horizontally on the top and bottom, and the antennas of the sensors 6 and 5 are oriented parallel to the screen on the front and back. To make the positions of the sensor clear, FIG. 3 shows the layout. An optional sensor 7 is possible for measuring background noise as a reference.

[0070] Next the user defines motional commands. By activating the command recorder software program, the sensor data is collected while the user issues the desired command to be recorded. This process is done several times to establish statistics and a database of commands. The signals from the sensor are used as training data for the MCS processing software. Commands to be issued by the computer ~~as~~ are also assigned during the training period. Triggering threshold levels and logic are also determined during this process.

CLAIMS

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

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6. (Cancelled)

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19. (Cancelled)

20. (Cancelled)

21. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, comprising:

a sensor positioned to pick up electrical fields existing in the interaction zone and providing an output voltage signal representative of the electrical fields sensed;

a first stage buffer amplifier having an input and an output;

a high pass filter connecting the output voltage signal from the sensor to the input of the first stage buffer amplifier;

a second stage amplifier having an input and an output;

a low pass filter connecting the output of the first stage buffer amplifier to the input of the second stage amplifier;

wherein the output of the second stage amplifier is a signal representative of the electrical fields sensed by the sensor within a desired range of frequencies.

22. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 21, wherein the sensor is configured to have electrical characteristics of an electric source in series with a capacitor.

23. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 21, wherein the body in the interaction zone creates a capacitance electrically in parallel with the sensor, the amount of capacitance created by a particular body depending upon the position of the body in the interaction zone, the closer the body in the interaction zone to the sensor, the greater the capacitance created.

24. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 23, wherein the capacitance in the interaction zone decreases the output voltage signal of the sensor, the amount of decrease in the output voltage signal depending up the

amount of capacitance created which is dependent upon the position of the body in the interaction zone.

25. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 24, wherein the sensor senses a background electric field in the interaction zone.

26. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 25, wherein the background electric field has a voltage and a frequency, and wherein the first stage amplifier has an input impedance high enough to preserve the output voltage signal from the sensor and to keep the sensor floating at the voltage of the background electric field, but small enough to keep the corner frequency of the high pass filter near the frequency of the background electric field.

27. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 26, wherein the capacitance created by the body in the interaction zone is electrically a part of the high pass filter, wherein the high pass filter has a corner point at a particular frequency, wherein an increase in the capacitance shifts the corner point lower, and wherein sensitivity of the device at the frequency of the background electric field increases as the corner point decreases.

28. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 27, wherein the background electric field is an A.C. background noise field of between about fifty and about sixty hertz created by power lines in the vicinity of the sensor.

29. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 28, wherein the corner frequency of the low pass filter is below fifty hertz.

30. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 22, wherein the body in the interaction zone acts as an electric source to increase the output voltage signal of the sensor.

31. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 21, wherein the device is a part of a control system for an electrical apparatus and the output of the second stage amplifier is connected to the control system whereby a body motion in the interaction zone at least partially controls the electrical apparatus.

32. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 31, wherein the control system includes at least one pair of related sensors wherein the system determines motion of the body along an axis between the pair of related sensors.

33. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 32, wherein two pairs of related sensors are used to determine motion of the body in two dimensions in the interaction zone.

34. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 33, wherein three pairs of related sensors are used to determine motion of the body in three dimensions in the interaction zone.

35. (Previously Presented) A device for sensing presence and motion of a body in an interaction zone, according to Claim 31, wherein the electrical apparatus to be controlled is a computer including a display device, and wherein the device sensor is part of the computer display device.

36. (Previously Presented) A method for sensing presence and motion of a body in an interaction zone, comprising the steps of:

positioning a sensor to pick up electrical fields existing in the interaction zone and to provide an output voltage signal representative of the electrical fields sensed, the electrical fields sensed including a background electrical field of a particular frequency;

eliminating output voltage signal components below a predetermined frequency;

thereafter eliminating output voltage signal components above a predetermined frequency;

amplifying the resultant signal to provide a processed output signal representative of the electrical fields sensed by the sensor within a desired range of frequencies at a particular time; and

comparing the processed output signal representative of the electrical fields sensed by the sensor within a desired range of frequencies at a particular time with a processed output signal obtained for the background electrical field when no body is present in the interaction zone, differences in such signals indicating presence and motion of a body in the interaction zone.

37. (Previously Presented) A method for sensing presence and motion of a body in an interaction zone according to Claim 36, wherein the background electrical field of a particular frequency is an A.C. background noise field of between about fifty hertz and about sixty hertz created by power lines in the vicinity of the sensor.

38. (Previously Presented) A method of controlling electrical apparatus by a body gesture within an interaction zone, comprising the steps of:

positioning a sensor to pick up electrical fields existing in the interaction zone and to provide an output voltage signal representative of the electrical fields sensed, the electrical fields sensed including a background electrical field of a particular frequency;

eliminating output voltage signal components below a predetermined frequency;

thereafter eliminating output voltage signal components above a predetermined frequency;

amplifying the resultant signal to provide a processed output signal representative of the electrical fields sensed by the sensor within a desired range of frequencies at a particular time;

performing a particular body gesture in the interaction zone and obtaining a plurality of consecutive processed output signals over a particular period of time representing the particular body gesture to create a predefined body gesture signal representative of the particular body gesture;

monitoring further processed output signals over monitoring periods of time;

comparing the monitored processed output signals with the predefined body gesture signal to determine if the predefined body signal is performed and providing an occurrence signal if the gesture is performed; and

using the gesture signal to control the electrical apparatus.

39. (Previously Presented) A method of controlling electrical apparatus by a body gesture within an interaction zone, according to Claim 38, wherein the electrical apparatus to be controlled is an apparatus having a display device, and wherein the sensor is part of the display device to create an interaction zone adjacent the display device.

40. (Previously Presented) A method of controlling electrical apparatus by a body gesture within an interaction zone, according to Claim 39, wherein the step of positioning a sensor to pick up electrical fields existing in the interaction zone and to provide an output voltage signal representative of the electrical fields sensed includes the step of positing at least a pair of related sensors to pick up electrical fields existing in the interaction zone and to provide an output voltage signal representative of the electrical fields sensed by the at least one related pair of sensors representative of the motion of the body along an axis between the pair of related sensors.